

SIGNIFICANT RESULTS

E72-10261

AFAR AND ERTS-1 IMAGERY

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The excellent ERTS-1 imagery of the Afar region of Ethiopia (image nos. 1082-07020-5, 1082-07022-5, 1101-07074-5, 1101-07080-5, 1101-07083-5) permits a preliminary revision to the analysis of the structures of this triple-rift junction, and also revisions to the outcrops of some lithological formations.

The fault-belts of the Afar floor can now be mapped in fine detail, and show (i) that in northern Afar there is southward bifurcation of the Quaternary volcanic lines rather than a simple en-echelon pattern, and (ii) that the NW-SE fault-belts of western and central Afar are more intimately related to African rift structures than has previously been suspected.

The Danakil horst is identified to be limited on its western side against Afar by a major fault-line, and it seems unlikely that the horst is the exposed, easterly portion of a west-dipping sialic block underlying all northern Afar. The Salt Plain therefore appears to be a true graben, and may well lack a sialic foundation.

The Ethiopian plateau-Afar margin consists of a series of right-offset sectors, the offsets being marked by silicic volcanic centres. If sialic crust should continue subsurface, south beyond the offsets then most of Afar is probably underlain by continental crust, and the drift of Arabia from Africa goes for a burton. But this interpretation is not favoured by the writer.

The nature of these offsets is related to the vexed question of cross-rift faulting. Such faulting is identifiable on the ERTS-1 imagery, both on the Afar floor (eg. Musli crater region), and in the monoclinally warped western margin (eg. southeast of Lake Hayk). The significance of this faulting, though entirely subordinate to the tensional faults of the fault-belts, awaits elucidation.

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